

Claims:

1. A speaker apparatus comprising
a speaker unit;
a passive radiator unit;
5 a front baffle on which said speaker unit and said passive radiator unit are mounted, which front baffle forming a constituent part of a speaker box; and
a back plate; wherein
said speaker unit, said passive radiator unit and said front baffle form
10 a closed front chamber,
said speaker unit, said front baffle and said back plate form a closed rear chamber, and
said speaker unit is disposed in directions opposite to said passive radiator unit, or in directions that are approximately opposite to said passive
15 radiator unit.
2. The speaker apparatus of claim 1, wherein
said front baffle is provided with an auxiliary baffle in the front, and
said closed front chamber is formed by said speaker unit, said passive radiator
20 unit, said front baffle and said auxiliary baffle.
3. The speaker apparatus of claim 1, wherein
said passive radiator unit is mounted on a closed-back frame having
an opening in one direction of the side.
- 25 4. The speaker apparatus recited in claim 1, ~~2 or 3~~, wherein
said passive radiator is provided with an edge having a thick central portion covering the surface of diaphragm and a circumference portion integrally formed together.

5. The speaker apparatus of claim 4, wherein
said edge is an up roll type edge.
6. The speaker apparatus of claim 1, wherein
5 the area of opening in said front baffle, or passive radiator unit, is not
less than 30 % of effective area of the diaphragm of said speaker unit.
7. The speaker apparatus of claim 1, wherein
corner edge of an opening connecting a space between said speaker
10 unit and said passive radiator diaphragm in said closed front chamber is
chamfered or rounded.
8. The speaker apparatus of claim 1, wherein
a semi-circle or arc-shape holder is provided integrally at the vicinity
15 of an opening connecting a space between said speaker unit and said passive
radiator diaphragm in said closed front chamber for supporting damper of
said passive radiator unit.
9. The speaker apparatus of claim 1, wherein
20 said front baffle is provided with a diffuser at the front, and an
acoustic opening is provided in a direction perpendicular to the direction of
sound radiation from said passive radiator.
10. The speaker apparatus of claim 1, wherein
25 said front baffle is provided with heat dissipation slits and a sealing
material in a region which makes contact with bottom plate of said speaker
unit.
11. A sound reproduction apparatus comprising:
30 (A) a speaker apparatus comprising

a speaker unit;

a passive radiator unit;

5 a front baffle on which said speaker unit and said passive radiator unit are mounted, which front baffle forming a portion of a speaker box; and
a back plate; wherein

10 said speaker unit, said passive radiator unit and said front baffle form a closed front chamber,
said speaker unit, said front baffle and said back plate form a closed rear chamber, and

15 said speaker unit is disposed in direction opposite to said passive radiator unit, or in direction approximately opposite to said passive radiator unit,

(B) a microphone for detecting sound output signal radiated from said speaker apparatus, and

15 (C) a power amplifier unit for amplifying and inputting a signals detected by said microphone to a differential amplifier for the purpose of sound feedback control.

12. A sound reproduction apparatus comprising:

20 (A) a low frequency range speaker apparatus comprising
a speaker unit;
a passive radiator unit;

25 a front baffle on which said speaker unit and said passive radiator unit are mounted, which front baffle forming a portion of a speaker box; and
a back plate; wherein

30 said speaker unit, said passive radiator unit and said front baffle form a closed front chamber,
said speaker unit, said front baffle and said back plate form a closed rear chamber, and

30 said speaker unit is disposed in direction opposite to said passive

radiator unit, or in direction approximately opposite to said passive radiator unit, and

(B) a full range speaker apparatus, wherein
5 input signals to be input to said low frequency range speaker apparatus are reverse-phased in relation to input signals to be input to said full range speaker apparatus.

13. A speaker apparatus comprising
10 a speaker unit;
a passive radiator unit formed of an edge, a damper and a diaphragm;
a front baffle on which said speaker unit and said passive radiator unit are mounted and is provided with an opening for exposing plate portion of said speaker unit to the outside, which front baffle forming a portion of a speaker box; and
15 a back plate; wherein
said speaker unit, said passive radiator unit, said front baffle and a cushion attached to said speaker unit form a closed front chamber,
said speaker unit, said front baffle and said back plate form a closed back chamber, and
20 said speaker unit is disposed in a reverse direction relative to said passive radiator unit.

14. The speaker apparatus of claim 13 further comprising a sealing panel,
wherein

25 said closed rear chamber is formed by said speaker unit, said front baffle, said back plate and said sealing panel.

15. A speaker apparatus comprising
a speaker unit;
30 a front baffle, on which said speaker unit is mounted to form a portion

of a speaker box and is provided with an opening for exposing the plate portion of said speaker unit as well as an acoustic opening in a region corresponding to the back of said speaker unit; and

5 a back plate forming a portion of said speaker box; wherein
said speaker unit, said back plate and said front baffle confine sound output generated from the front of said speaker unit, while actual sound is reproduced through said acoustic opening disposed in a region corresponding to the back of said speaker unit.

10 16. A speaker apparatus comprising
 a speaker unit;
 a front baffle, on which said speaker unit is mounted to form a portion of a speaker box; and
 a back plate forming a portion of said speaker box and is provided with
15 an opening for exposing plate portion of said speaker unit; wherein
 said speaker unit, said back plate and said front baffle confine sound output generated from the back of said speaker unit, while actual sound is reproduced by making use of the sound output generated from the front of said speaker unit.

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17. A speaker apparatus comprising
 a speaker unit;
 a port;
 a front baffle, on which said speaker unit and said port are mounted to
25 form a portion of a speaker box and is provided with an opening for exposing plate portion of said speaker unit, an acoustic opening in a region corresponding to the back of said speaker unit and a port opening for attaching said port; and
 a back plate forming a portion of said speaker box; wherein
30 sound output generated from the back of said speaker unit is

reproduced through said acoustic opening, while sound output generated from the front of said speaker unit is reproduced through said port opening.

18. A speaker apparatus comprising

5 a speaker unit;

 a port;

 a front baffle, on which said speaker unit and said port are mounted to form a portion of a speaker box and is provided with an opening for the front of said speaker unit and a port opening for attaching said port; and

10 a back plate forming a portion of said speaker box and is provided with an opening for exposing plate portion of said speaker unit; wherein

 sound output generated from the front of said speaker unit is reproduced through said opening, while sound output generated from the back of said speaker unit is reproduced through said port opening.

15

a 19. The speaker apparatus recited in claim 13, claim ~~15 or claim 17,~~
wherein

 plate portion of speaker unit is provided with an uneven surface.

a 20. The speaker apparatus recited in claim 13, claim ~~15 or claim 17,~~
wherein

 plate portion of speaker unit is provided with heat radiation fins.

21. A sound reproduction apparatus comprising:

25 (A) a speaker apparatus comprising

 a speaker unit;

 a passive radiator unit formed of an edge, a damper and a diaphragm;

 a front baffle on which said speaker unit and said passive radiator unit are mounted to form a portion of a speaker box, and is provided with an opening; and

a back plate; wherein
said speaker unit, said passive radiator unit, said front baffle and a cushion attached to said speaker unit form a closed front chamber,
said speaker unit, said front baffle and said back plate form a closed
5 rear chamber, and
said speaker unit is disposed in a reverse direction relative to said
passive radiator unit,

(B) a microphone for detecting sound output signal radiated from said
speaker apparatus, and

10 (C) a power amplifier unit for amplifying and inputting signals detected
by said microphone to a differential amplifier for the purpose of sound
feedback control.

22. A sound reproduction apparatus comprising:

15 (A) a low frequency range speaker apparatus comprising
a speaker unit;
a port;
a front baffle on which said speaker unit and said port are mounted to
form a portion of a speaker box, and is provided with an opening and said port
20 opening; and
a back plate forming a portion of said speaker box; wherein
actual sound is reproduced by making use of sound output generated
from the back of said speaker unit and sound output coming through said
port,

25 (B) a microphone for detecting sound output signals radiated from said
speaker apparatus, and
(C) a power amplifier unit for amplifying and inputting signals detected
by said microphone to a differential amplifier for the purpose of sound
feedback control.

23. A sound reproduction apparatus comprising:

(A) a low frequency range speaker apparatus comprising
a speaker unit;
a front baffle on which said speaker unit is mounted to form a portion
5 of a speaker box, and is provided with an opening; and
a back plate forming a portion of said speaker box; wherein
said speaker unit and said front baffle confine sound output generated
from the front of said speaker unit, while actual sound is reproduced by the
sound output generated from the back of said speaker unit, and

10 (B) a full range speaker apparatus, wherein
signals to be input to said low frequency range speaker apparatus are
reverse-phased in relation to signals to be input to said full range speaker
apparatus.

15 24. A sound reproduction apparatus comprising:

(A) a low frequency range speaker apparatus comprising
a speaker unit;
a port;
a front baffle on which said speaker unit and said port are mounted to
20 form a portion of a speaker box, and is provided with an opening and said port
opening; and
a back plate forming a portion of said speaker box; wherein
actual sound is reproduced by making use of sound output generated
from the back of said speaker unit and sound output coming through said port,
25 and

(B) a full range speaker apparatus, wherein
signals to be input to said low frequency range speaker apparatus are
reverse-phased in relation to signals to be input to said full range speaker
apparatus.

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